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ABSTRACT

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PROCEEDINGS OF THE FEDERAL LIBRARY COMMITTEE MEETINGS, DECEMBER 16, 1970 AND APRIL 28, 1971 ON IMPLICATIONS TO THE FEDERAL LIBRARY COMMUNITY OF THE AIRLIE CONFERENCE ON INTERLIBRARY COMMUNICATIONS AND INFORMATION NETWORKS, SEPTEMBER 28-OCTOBER 2, 1970

Federal Library Committee
Library of Congress
Washington, D.C. 20540

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ABSTRACT

The Federal library community has felt an increasing concern about the role that Federal libraries will play in library and information network systems. Because of this concern, the Federal Library Committee (FLC) called a meeting at the Library of Congress on December 16, 1970 to discuss the implications for Federal libraries of the Conference on Interlibrary Communications and Information Networks (CICIN) which had been held at the Airlie Conference Center, Warrenton, Va., from September 28 through October 2, 1970. Summaries of the Working Groups' recommendations, along with recollections of detailed discussions and working problems which were encountered in developing these recommendations were presented at this meeting. Participants and the Conference Working Groups represented are listed.

The summary conclusions and recommendations of that meeting were studied by FLC's Task Force on Automation and those deemed to be of most interest and importance to the Federal library community were presented to FLC during its April 28 meeting. FLC Task Forces will study these recommendations for determination of future projects and programs.

INTRODUCTION

The Federal library community has felt an increasing concern about the role that Federal libraries will play in library and information network systems. Because of this concern, the Federal Library Committee (FLC) called a meeting at the Library of Congress on December 16, 1970 to discuss the implications for Federal libraries of the Conference on Interlibrary Communications and Information Networks (CICIN) which had been held at the Airlie Conference Center, Warrenton, Va., from September 28 through October 2, 1970.

The principal aim of the CICIN was to explore library and information services which offer the greatest potential for network involvement. The Conference was organized into five groups of approximately 20 members each, who discussed the problem areas assigned to them and submitted recommendations at a final Plenary Session. The proceedings of this Conference, to be published as *Interlibrary Communications and Information Networks*, will contain commissioned papers plus the summaries of the working group discussions and their recommendations for further action.

Invited to the December 16 meeting were members of the Federal Library Committee, a panel of representative Federal librarians and information scientists who had participated in the deliberations of the Conference, and other interested members of the Federal library community. Mr. John Lorenz, Deputy Librarian, Library of Congress, served as Acting Chairman, and Mrs. Madeline Henderson, Center for Computer Sciences & Technology, National Bureau of Standards, who represented the FLC on the Advisory Board for the Conference, served as Moderator.

During the discussion, Conference participants summarized the conclusions and recommendations of the particular working group in which they had participated. To that were added additional comments on some of the difficulties encountered by the Groups in such areas as problem definition and scope, and the magnitude of literature and information to be compressed within the brief time of the meeting, in order to come up with recommendations which represented a consensus of their team efforts.

Following the discussion meeting, the FLC Task Force on Automation (TFA), chaired by Mrs. Henderson, undertook to review the recommendations in order to extract those of particular interest to the Federal library community. The TFA was fortunate in receiving the assistance of Mr. Peter Haskell, of the staff of Cornell University Library, who was participating in the Washington Seminar: Library Career Development Institute at Catholic University. The Institute, sponsored by the U.S. Office of Education, sought to place its participants in operational situations as interns, to give them experience and insight through placements relevant to their needs and goals. Mr. Haskell, because of his interest in the information network concept, elected to work with the TFA in this study project. Through a series of consultations and work sessions with FLC and TFA members, and local CICIN participants, Mr. Haskell developed a refined list of summary conclusions and recommendations from CICIN which were of particular interest to the Federal library community.

This list was submitted to FLC members prior to the April 28th meeting, and served as a basis for discussion at that meeting. The consensus was that the list did indeed represent matters of concern to Federal librarians, and did contain suggestions for potential action and programs. The membership agreed that FLC Task Forces should be encouraged to study the list and to propose specific projects for FLC approval and support.

This publication is intended to present the reports and the ensuing discussion of the two FLC meetings, as a means of informing the Federal library community of the implications of this Conference for them, and of providing an overview of discussions and working problems at the Conference which might not necessarily appear in the formal publication of the conference proceedings but might have merit for future conferences of this kind. Certain liberties in the form of rearrangement of the presentations at the December meeting have been taken by Mrs. Henderson in order to make this publication a more readable document.

PART I. FLC MEETING, DECEMBER 16, 1970

The participants in this meeting were:

	Representing
Mrs. Madeline Henderson Center for Computer Sciences & Technology National Bureau of Standards Washington, D.C. 20234	Moderator
Col. Andrew A. Aines Office of Science & Technology Executive Office of the President Washington, D.C. 20506	Federal Sci-Tech Information Community
Mr. John Lorenz Deputy Librarian of Congress Library of Congress Washington, D.C. 20540	Library of Congress
Dr. Malcolm S. Ferguson Reference Services Division National Library of Medicine Bethesda, Maryland 20014	Network Needs and Development, CICIN
Mrs. Henriette Avram MARC Development Office Library of Congress Washington, D.C. 20540	Network Services, CICIN
Miss Mary E. Stevens, Consultant Center for Computer Sciences & Technology National Bureau of Standards Washington, D.C. 20234	Network Technology, CICIN
Mr. Robert B. Lane Readers Services Division Air University Library Maxwell AFB, Alabama 36112	Network Organization, CICIN
Mr. Fred Croxton Chief, Administrative Department Library of Congress Washington, D.C. 20540	Network Planning, CICIN
Dr. Russell Shank Director of Libraries Smithsonian Institution Washington, D.C. 20560	Advisory Board, CICIN, and Federal Library Committee

DISCUSSION

MRS. MADELINE HENDERSON: The purpose of our panel discussion today is to review the Conference on Interlibrary Communications and Information Networks, to describe the way in which the Conference was developed and conducted, and to explore some of the results and implications for the Federal library community. We have asked members of the Federal library and information community who participated in that Conference to serve as our panel members today. We are very glad that so many others from the library community in the Washington area were able to join us.

The idea of a conference on interlibrary communications and information networks started independently in the minds of two groups of people: the Office of Education, which had an interest in the idea of such a meeting and the means to support a conference on this subject, and the American Library Association (ALA), whose membership had the intellectual and professional capabilities to conduct such a conference, along with an interest in the subject. The two groups got together about three years ago at an ALA Conference and agreed that library involvement in networking was indeed a matter of concern. A couple of meetings were held to discuss the ways and means of expressing this concern, and, finally, a meeting was held here at the Library of Congress, called by Dr. Lee Burchinal of the Office of Education and consisting of representatives of all the libraries and information science organizations involved in, or interested in, networking systems. The meeting was called, in effect, to say that the Office of Education was interested in the subject and to ask how such a conference should be organized. The consensus was that the American Library Association should be the responsible organization for the Conference. The ALA was fortunate in subcontra ting with Mr. Joseph E. Becker, Becker and Hayes, Inc., to plan for and direct the conference and to handle the publication of the proceedings. It was also agreed that the concerns of the individual groups, including libraries, the information science community, and communications groups, would be built into plans for the conference, and that these groups would work toward the success of the conference. They, in turn, would promote further action in their own areas of interest based on the results of the conference.

An Advisory Board was named and I was asked to serve on this Board to represent the Federal Library Committee. The Advisory Board held several planning sessions with Mr. Becker and his staff. I remember that at the first session in Chicago we made a deathless statement to the effect that the Conference should be "a 'source' of information, not a 'sink'." Specifically we said, "The major conference objective is to produce a source of information in the form of proceedings. It will be a creative working conference, not a 'sink' of information."

The Conference plan called for a number of papers to be commissioned as a basis for deliberations and to represent different aspects of the networking picture. The Conference participants would include members of the Advisory Board, the Conference staff, the authors of commissioned papers, and additional invitees as deemed advisable by the Board and the staff. As a result, about 125 participants gathered at Airlie House the last week in September and the first of October. We all obviously lived right because it was beautiful, early fall weather, and a wonderful setting for a very active, hard working conference. I personally found it most interesting and informative–at times frustrating, and I guess sometimes confusing, but always very worthwile.

In order to handle the total subject of interlibrary communications and information networks, it was determined that the commissioned papers should be directed to the particular areas of these working groups. Each group was given a responsibility, a mission, and an aim. Each was to develop its own way of trying to fulfill that aim, and, in turn, to produce summary reports and specific recommendations. The whole Conference met in a preliminary plenary session on Wednesday of that week and again in a wrap–up session on Friday.

The Conference proceedings, to which we referred earlier, would include the commissioned papers, the working group summaries, the results of the plenary session or wrap–up on Friday, and all the recommendations and conclusions emanating from the Conference.

I would like to read, for your information, a list of recommendations from that Conference which were directed particularly to the National Commission on Libraries and Information Science:

> *That,* the National Commission set national policies in respect to network development in order to foster integrated action on local, state and regional levels.
>
> *That,* the National Commission, as part of its annual report to the President and to Congress, describe the advances made in network development, and pinpoint the strengths and weaknesses of information access among different constituencies, geographic regions and groups.

That, the National Commission assure the financial support required for a network program by developing legislative proposals at the Federal and state levels, generating a base of understanding within the library and information science professions, and providing a broad base for public understanding of the need for a national network of libraries and information centers.

That, the National Commission coordinate its programs closely with those of the Office of Telecommunications Policy in the Federal Communications Commission in order to ensure that emerging commercial and governmental telecommunications programs will be capable of accommodating the communication requirements of the national network of libraries and information centers.

That, the National Commission designate or recommend establishment of a national center to coordinate the creation of standard bibliographic data records for all forms of material.

That, the National Commission support the establishment of interdisciplinary educational and training programs to equip librarians and information scientists with the technical knowledge required of them in library and information networks at all levels.

That, the National Commission coordinate the development of national plans for a library and information network with the plans of other countries in order to facilitate information transfer on an international basis.

That, the National Commission be apprised of the discussions, conclusions and recommendations of this Conference and by all appropriate means be requested to assume responsibility of promoting the network objectives that have been identified.

The purpose of our discussion today is not only to report to the Federal Library Committee and the Federal library community on the Conference, at which the Federal library community was represented and in which the Federal library community played such an important part, but also to explore the implications for the community of the results of the conference. What should the Federal library community do now as an aftermath of the conference, and in the period before the National Commission gets underway, that will perhaps enhance the responsibility and position of the National Commission in relation to these recommendations? Can the Federal library community start some efforts based on the recommendations of this conference which will move the field forward?

We asked Colonel Andrew Aines, Chairman of the Committee on Scientific and Technical Information (COSATI), to speak to the question from the point of view of the Federal scientific and technical information community.

COL. AINES: First, let me talk a little bit about the Conference. The managers decided that they would not inflict me on any particular group, so that, happily, I was able to free–wheel around the various groups and to get the flavor of much of what was going on; the human interaction as well as the interplay of thinking. Much of what I have to say then will come out of my notes, some comments made by Joe Becker at another session which reflected on the meeting, and a leaky memory. I'm going to provide both a sort of Polaroid shot and, at the same time, act like a Greek horse. These are all impressions, and in my impressions I think you will find some of the answers that you've asked for. I will wind up with some specific comments that might be more to the point.

First, I was rather pleased to see the extraordinary mix of people that were brought together, very eminent and very capable people, and all of whom were there in sort of an egalitarian mood. There were no Mount Olympuses that I could note, everybody seemed to be about the same height, and they acted that way, regardless of their particular place in the heirarchy of organizations represented. And I even noted, and I don't say this in the literal sense, a lobbyist or two operating rather effectively.

As to interaction, I found the librarians unwilling to operate in the shadows as they had in former years. This was perhaps one of the most important points that struck me. I found that they were knowledgeable and could converse on the finer points of telecommunications, ADP, data systems, networking, and the rest. Intellectually, they stood their ground very, very well indeed. There were no strong currents of ultraconservatism that I noticed, and no anti–technology harangues, no excoriation of the world of electronics and nobody even burned the effigy of Alvin Weinberg.

I found a sobering recognition, however, that the resources to exploit technology and networking would be hard to come by at this point in time. These were practical people that I listened to throughout. I enjoyed the inputs from many experts from various fields who gave their views freely, without concern for "establishment" views, and I commend them for this, and I appreciated the general willingness of most of the people at Airlie to overcome shortages of resources by means of cooperative programs, certainly one of the strong virtues of networking.

I was impressed by the management of the Conference. There was enough organization and planning to keep the operation moving, but not too much to suppress lively inquiry and debate, and creative thinking. People worked hard. From time to time it was obvious that sparks flew, but not enough to create second–degree burns.

There was recognition that national policy is useful and needed. This view did not necessarily exist a mere five years ago in the community. There was understanding of the role of Congress, and how networking could save money, which in turn would be a point of considerable interest to Congress. I heard much discussion about models, covering the range from monolithic networks to loose, almost casual, arrangements. I heard some musical strains, musical to me at least (and I don't mean the poetry and songs at the end, or the music I heard in the lounge), of phrases like, "networking can improve quality," "it can improve services," "you can get economies of scale." I heard people talking about rights to information, about tying libraries and education together, and about the benefits to be gained from networking. It was pleasant to hear speakers talk about CATV and user–oriented systems, about the obvious need for better management in all of our information programs, and about providing access to relevant information rather than turning the total files loose on the unwary customer.

There was a recognition of the need and the difficulty of planning at a number of levels, the need of goals and objectives to obtain networking, the need for a common conceptual framework, and a concern that the application of capital to facilities without these requirements may, in the long run, act as a barrier to information flow via networks.

There was something expressed akin to an information "Bill of Rights"—every citizen is entitled to access to the total information resources of the country. This was expressed, as some of you may remember, in the Systems Development Corporation study of document availability a few years back. How far short we are of this idea was implied in a sense in the very presence, the very calling together, of this networking effort. I was pleased to hear that others see the problem as a complex social engineering undertaking which, of course, is exactly what it is. I think it was very useful, and showed good perception by Joe Becker and his colleagues, to bring intelligence to the workshops about networks of all kinds from national down to the state and local levels. I don't know how many problems have to be overcome to get harmony and progress in any undertaking which brings these two together.

Willingness to look at non–book, non–print media was also in strong evidence. The interest in TV channels for education which was generated and in evidence, is a sign to me that there are a growing number of people who are interested in broadening the span of interest into related fields; one of my hobby horses is the field of communications, as some of you know.

Now for a few appraisals. Except for the new information provided for tutorial purposes for those who need it, and the expansions of horizons for many, there was probably nothing very much new for those who have been around this same track before. The expectation that the poor National Commission on Libraries and Information Science, when it comes into being, will be the great white knight to slay the dragons mentioned above is a pious hope that asks too much of a commission. The Commission has very little authority for recommendations. I, too, have great hopes for the National Commission on Libraries and Information Science, but I am respectful about the almost insoluble problems that it faces; problems we all face all of the time. And, frankly, I have to admit that I was a little bit disappointed in this glib, sleight–of–hand, messianic approach that ended the meeting. The formula is hard work, as I read it, at all levels, by all people in this business. I know of no easier formula than something as pragmatic and simple as that. Intelligent, motivated people, working hard, who want to make progress at all levels, is the answer as far as I'm concerned to anything we can accomplish in networking, and we mustn't begin to feel that the Office of Science and Technology, or society, or FLC, or the Commission on Libraries, or any one group can replace this important requirement. I know, because I'm making contributions to the National Commission.

Creating a National Commission, in which you worry about geography, and minority groups and everybody else; as those of you who have worked in this kind of an area know, it's anything but an easy job. In addition, you have a real problem in getting together the kind of group which can catch fire. This is something which I pray will happen; that we're lucky enough to get the very best people that we're trying to secure for this group. I want to make it clear, and mark it on the tablets of your memory, that the solution to the overall problem is going to be in *what we all* do, every one of us, *in every area* in which we are working.

Now looking back at the Federal library community – I expect we'll do *some* networking, along

with some other government information programs, when discernible benefits, including cost–sharing and cost–saving, become possible. I am sanguine about the availability of more funds in this area for all kinds of information services, including networks, even though we're getting support in some areas. When I contemplate what's happening to Federal agency information programs and the lack of any strong remedial action to prevent the dissolution of some of these efforts, and then I look at the world of networking, I'm not exactly sure that Congress is necessarily in a mood to put out a lot of money unless it finds good reasons for financial expenditures for this purpose.

It is my expectation that networking will grow in areas where there are intense problems and where rapid and efficient handling of data and information are required. Information, money, space, and facilities, I think, will go to overcome pollution, reduce crime, improve health services, and provide better data for decisions. That's about the route which will be required to create most of the networking facilities that we're thinking about. Nevertheless, I do hope that there will be a "trickle–down" process to help libraries and information analysis centers, and other programs in other areas; in education, research, in all of those fields that are just not in the limelight at present, and don't happen to be in an area where problem solving is necessarily the mode.

We're a long way off intellectually, if not in time, when most library managers and staffs, information analysis centers, and documentation centers, are of the calibre to be able to enter information networking arrangements. Entrepreneurship, motivation, experience, state of the climate, cost of equipment – these are barriers at this junction of time. The *Rx*, again – I simply go back to the same statement I made previously – is a lot of planning, hard work, preparation of a sound foundation, education, training, piggy–backing on those things which are successful, and leapfrogging those things that are just seemingly going nowhere.

Are we going to succeed? My answer to the community is "yes," but, initially, in spearhead projects rather than in across-the-board advances. We will have to demonstrate ability and a string of successes before society will reward us with recognition and give us the resources to do more.

One final comment I want to make, which I have written in my notes, is I think that we also have a philosophic trap. We must think in terms of a network of networks, or a system of systems, which are very open-ended in what they accomplish and with great wsitchability. If we think rather in terms of creating legal requirements where a Czar or Czar group makes the determinations about any particular group, whether it be in the mission area, the discipline area, the library area, the problem–solving area, or mixes of all these, I just venture to say that it would be a bad mistake if we pushed too hard for such a formal organization and, in effect, create a new type of gatekeeper. Maybe that's the way to go, but I'm saying that at this stage of the game I'd rather take my chances in the process where the people simply need, and can demonstrate the need, first, for a mechanized information system, and, then, for networks which will bring groups of people together. That's a much more logical approach. Much of what we have been doing in the last couple of years has been in trying too hard to create massive network plans, or massive national systems plans, and now we've begun to realize that if we do too much of that we may, unwittingly, be closing off degrees of freedom in the future.

Madame Chairman, those are my comments. I hope I haven't offended too many people.

MRS. HENDERSON: No, I think your points have been well taken.

Some of the Conference recommendations were directed to the Library of Congress, and we've asked Mr. John Lorenz, Deputy Librarian, and our Chairman today, to bring some of his reactions both to the Conference and to the results of the Conference.

MR. LORENZ: Madeline knows that I tried to beg off doing this at all because the fact is that I was only at the conference for about five sessions out of a potential of 100 since, in addition to having a 39th birthday that week, I had a 26th wedding anniversary which you didn't know about. I also had a few things here at the Library of Congress that needed my attention. But in response to your petition, I have set down a few notes here that I'll try to stick to.

It did seem to me that the Conference gathered together some very good people, and I'm sure that there was good exchange of information between these people, both formally and informally. As we all know, sometimes the informal exchange is even more valuable than the formal exchange. I thought that the Conference was very well organized, and I'm inclined to think that perhaps expectations for the outcome of the Conference might have been higher than they should have been. I think that some people went there thinking that this was the conference which was going to develop the network plan,

and, as a result, there was some frustration because it quickly became apparent that the Conference could not do this.

Again, hindsight is a wonderful thing. Looking back, it seems to me that the total Conference might have been better if there has been fairly clear statements at the beginning on 1) where we are now in this country in terms of interlibrary communication and network development, with a realistic evaluation of what the present networks are doing; 2) how much it has cost them to get where they are; 3) where they are going; and 4) how much it is going to cost them eventually to meet their present objectives. In response to your question, one of the things that might be done further in looking to the National Commission for assistance would be to supply some of this basic information. I think when this Commission comes into being, it will need to know the present status of network development in term of progress, problems, costs and objectives. I think that this is a job that still needs doing. If we could project some of the present networks and their objectives over the next 3-5 years, we might come up with some realistic calculations as to what costs might be, including possible support needed from the Federal Government and other sources. I believe that we have given the National Commission a good start in contributing the large mass of material which will appear in the final report. This may provide the base for it to build on. At least, it need not repeat the experience.

Another role of the Federal Library Committee would be to cut through this mass of material, because I think that we'll all admit that there is some underbrush in the mass. FLC could come up with some fairly concise statements of what it is that was really important that came out of the Conference. I'm glad to hear that some of the recommendations have already been boiled down to indicate those that will be of particular interest to the National Commission.

We might go even further than this and resolve some of the differences of opinion that appear in recommendations. It seems to me that, if the recommendations go to the Commission as is, it will seem like noise instead of clear direction. The Commission might very well be confused. If we can resolve some of the noise and come up with some clear answers, the Commission will be better served.

MRS. HENDERSON: I would like to turn now to our panel discussion. As we said earlier, we have asked members of the Federal library and information community who participated in the Conference to review the workings of the Conference for us today, and to address, in a sense, the different phases of this general question: What are the potentials, what are the problems, and what are the implications for the Federal library community?

The Conference proceedings, which we have already mentioned, will summarize the results of the Conference, but, in addition, there were deliberations which went on in the process of developing the total summary and recommendations which we felt you would find interesting in some detail. We have asked our speakers to summarize the working group deliberations to describe for you the process by which the conference was conducted, and some of the interim results of the deliberations.

The Working Groups which were developed at the Conference are listed on the agenda for today's meeting: Network Needs and Development, Network Services, Network Technology, Network Organization, and Network Planning. Let me repeat: We shall give summaries of each of the working groups, and you are encouraged to ask questions at any time; we will then discuss potentials and problems, and please feel free to comment at that time also, if you wish.

Dr. Malcolm Ferguson, Reference Services Division, National Library of Medicine, will discuss the working group on Network Needs and Development.

DR. FERGUSON: In order to keep within the time limits I think I will follow my paper fairly well here. The task of our group was to analyze the need for a national network of libraries and information centers and to develop a measure of its viability. We had great difficulty in crystallizing out a general statement on network needs and recommendations. To some the needs were quite obvious, some thought mainly of computer and telecommunication systems, while others thought largely of the more traditional library and communication approaches. Dr. Raynard Swank, Dean of the School of Librarianship, University of California, Berkeley, who developed the general and philosophical aspects of our report, spent three sleepless nights and agonizing days before the prose began to take shape. We didn't think we were going to come up with a thing. The following is a digest of our general statement.

The ability of man to save words, sounds and pictures for the future recall of man is one of his greatest achievements and has resulted in a cultural tool of great significance. This information resource is large and diverse, and everyone, according to his needs, should have direct and adequate access to it

for his survival and self-realization. Access should occur where the individual is, geographically, intellectually, emotionally, and socially. The schoolarly community is possibly best served by existing libraries and information services, although programs for the underprivileged and physically handicapped are achieving some success. There are still staggering inequities in sources of information available to people in the sparsely-populated, economically-depressed, or educationally-deprived communities.This is true for teachers, physicians, lawyers, and engineers, as well as the lay public. Existing libraries and information centers are often unable to provide relevant responses to requests for assistance, and fail to communicate to many readers in appropriate terms. The extent to which information needs are, in fact, being met is suspected more than it is documented.

The primary responsibility for providing information will continue to rest with the many agencies and institutions charged with serving individuals directly, such as libraries, broadcasting and television stations, and specialized information centers. These are the true terminals of the nation's information system and each must be strong, well-managed, and responsible. The prospect of providing an additional powerful capability for the above systems components is both attractive from a managerial viewpoint and also from the prospects of the community of users. A growing, more educated and more intellectually demanding population, together with technological advances, have given the old, established network concept a new and dramatic promise for many groups of users. While distribution of information is important, it is the quality of information, of ideas, and of insights that is in short supply. The challenge is that the best must be protected and disseminated.

Technology, including mechanical, electronic and methodological, which makes the concept of sophisticated networks possible, is only a means to an end. It makes a promise of improved human communication possible, but it does not make that promise real. However, the cooperation between libraries and other information collection centers cannot have its full impact without telecommunications and automation. The choice for any particular library is not whether the general concept of technologically supported information exchange is desirable, but whether a particular arrangement provides benefits that strengthen service, or have negative side effects that offset the benefits.

The following conclusions and recommendations were made: The diverse components shaping the many policies and judgments required by an effective network system must be drawn together through a proper planning organization. This network system should evolve out of present practices; it should be a composite of many efforts, be based on successful experience, be increasingly personal, extend the choices available to the individual (this was brought up over and over – that the individual was such an important part of this process), be responsive to change, and it must work. The following actions would be required: promotion of a receptive environment for network development, establishment of an organizational framework, provision of financial support, promotion of the development of professional expertise and professional skills, and research to understand network needs and performance.

A receptive environment would result from: freedom from competition: development of alternative communications systems, including public, private and non-profit; the unimpeded flow of information; technical compatability; mechanisms to review objectives and priorities; social concern for improved access to information; efforts on the part of both governmental and private agencies to meet established goals; the protection of personal privacy at the interface with technology; and freedom of access to information without constraints of censorship.

Regarding the organizational framework, the report states that the feasibility of developing a public corporation, along the lines of the Communications Satellite Corporation or the Corporation for Public Broadcasting, should be explored as a means of stimulating library and information networks to achieve a balance between local autonomy and centralized purpose, direction, and standardization. This corporation would relate to state and local governments, professional organizations, and the organizations operating networks.

Regarding financial support, it should be pluralistic and include the public and private sector as well as foundations. The budgets of resource and research libraries must be increased to support additional extramural services and to enable libraries to participate in improved information systems. The Federal Government should be primarily responsible for additional equipment, acquisitions, research, development, demonstrations, and operating costs. The state governments should also share in financing networks.

Regarding the promotion of professional and technical expertise, the skills, knowledge and insight required in network organization and administration should be identified. Such organizations as the National Commission on Libraries and Information Science, the American Library Association, the

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American Society for Information Science, and the U. S. Office of Education should be involved. Library and information science schools should prepare and test guidelines for alternate experimental courses and multi-disciplinary curricula.

Finally, regarding research needs and network performance, this would involve the preparation of a nationwide descriptive inventory of networks, the assessment of success or failure of existing networks, the assessment of unsatisfied information needs according to user categories and a study by a multi-disciplinary group of the implications of wired city cable systems. Libraries, including the three National libraries, should be encouraged to mount network demonstrations; these to include the use of satellites.

MRS. HENDERSON: Are there any questions of Dr. Ferguson at this time? You can see even from the first working group summary that the recommendations were quite general in some cases and quite specific in others.

The second working group that we would like to have summarized for us is that on Network Services, and the representative of that group is Mrs. Henriette Avram, Chief MARC, Development Office, Library of Congress.

MRS. AVRAM: I would say in summary that the session was a struggle for all the days that we were there, but I believe that we did come up with some worthwhile recommendations and conclusions. I think the most significant problem we had was that of understanding and agreeing on what was meant by the stated aim given to the working group: "to explore those information and library services which have the greatest potential for networking." My feeling was, and I believe it might have been the feeling of most of the working group also, that our goal was to hypothesize the network and to explore the potentials of what such a network would be to information and library services. The aim, as given, seemed to be stating the reverse of this. Consequently, on the day when we met and explored what we thought we had to do, we had great difficulty in arriving at a united opinion.

We started with a discussion of the users. Some of us felt that the users were Everyman, and, therefore, it was not up to our group to try and describe what he would need, but to assume that the user was anyone who had a right to information within any system, with the exception of a classified system. The other difficulty the working group encountered was a mixture of assignments. We were given the following for discussion: bibliographic services, reference services, and services of the network for educational purposes. The bibliographic services were mixed in terms of general bibliographic services and bibliographic services in relation to a particular media, audio-visual in this case, and data archives. Several of us felt that bibliographic services included all forms of material, and therefore, audio-visual material and data archives were subsumed under bibliographic services. In addition, the services for education, rather than education needed to build a network, was rather a maverick in the services group.

The decision was made after the early meetings to divide the groups into smaller working groups composed of those people who were principally interested in the subject of a particular working group, i.e., bibliographic services, and education, etc. During the individual sessions, it became obvious that in order to describe bibliographic services of any kind, for anybody, you immediately become involved with the fact that you can provide nothing until there is something in the system with which to provide it. What are all the prerequisites to provide bibliographic services? How are we going to gather all this information together, avoid duplication of effort, and have the standards that are required before we can talk about providing any kind of service at all? This then no longer became a discussion of services, but the things that had to be done prior to the discussions regarding the service itself.

The groups met separately, and then in joint sessions several times, trying to arrive at individual group opinions and then discussing the relevant points with the entire working group. The group felt that an organization, which was considered one organization but known to mean consisting of many component organizations, had to produce a standard bibliographic record for all forms of material at a central source. Otherwise, we could never avoid the duplication that now exists across the different types of services such as libraries, national bibliographies, and abstracting and indexing services. The group also felt that although it might cost more to produce this one record, we would have a consistent data base which could be used by all the services to provide information to their clientele.

The group finally came up with the statement that network services should provide access to the information for all types of users and to achieve this goal, the following actions are necessary: to establish bibliographic control for all forms of materials at all levels and in all subject areas, based upon

the creation of a standard, one-time record; to provide bibliographic tools, such as union catalogs, and directories to make network facilities available at the state, regional, national and international levels; to provide increased acquisition and accessibility of nonprinted materials, and to develop and make available reference skills appropriate to networking. We saw the need of a mediation service, i.e., individuals acting as the interface between the user and the stored data; to educate librarians, information producers and users in network operation; to provide appropriate communications links, delivery systems and switching mechanisms at all levels of the network; to guarantee availability of information resources appropriate to each functional level; to conduct research into the user's needs, etc.; to educate and train personnel, and to set up performance standards for personnel engaged in the mediation function.

The group made specific recommendations toward implementing such a service:

That, the American National Standards Institute Sectional Committee Z39 be charged with the development of the standard content designators for similar items of information across various forms of material. Funding and personnel should be provided to Z39 by government agencies at the national, state and local levels.

That, the National Commission on Libraries and Information Science should designate or recommend a national bibliographic center to coordinate the creation of a standard bibliographic record for all forms of material. The record created by any participating organization should fulfill the needs of all users, irrespective of the needs of the creator of the record, with consequent reduction in duplication of cataloging and reduced nationwide cataloging costs. Funding to reimburse participating organizations for more complete cataloging and to maintain the national center would be required. Appropriate organizations should designate agencies to assign a standard identification number for various forms of material.

That, the Council on Library Resources should be requested to begin implementation of a program of cataloging-in-publication (CIP) and eventually expand CIP to all forms of material.

That, the Library of Congress should expand coverage of its MARC program.

Methods of funding this expansion should be investigated, and the feasibility of an integrated system for recording and accessing of information on the location and availability of materials within the network should be studied.

I think those are the most significant recommendations of the Services group.

MRS. HENDERSON: I worked with the Services group during that week at Airlie House and I thought that one of the interesting things that we did—and I felt a useful thing at the time — was to redefine some of the network services and therefore rename them. Henriette mentioned that we called reference services "mediation," because we saw a difference in the act itself. We spoke of interlibrary loan as being, more realistically, the delivery of information, etc. I mention this because we did not make up meaningless and irreverent jargon, but were really trying to redefine network services.

Network Technology was the subject of a working group which will be summarized for us by Miss Mary Elizabeth Stevens, on the staff of the Center for Computer Sciences and Technology, National Bureau of Standards.

MISS. STEVENS: The Working Group on Network Technology also encountered difficulties and, in many cases, we did not get unanimous agreement as to the technical feasibility of where we should go next. In terms of the summaries prepared for the *Proceedings,* I must say that Joseph Becker and his staff have done a nice editorial job and the summary for our working group is much better than our draft, but, on the other hand, there are some slight differences in emphasis; some points are overemphasized and others are understated. Since the time is rather short–and you will eventually have copies of the *Proceedings*–let me point out a few of our recommendations.

We had as our assigned goal, and I quote: "to explore the capabilities of communications and computer technology to meet library information and network requirements." We made certain general assumptions. The first of these, as given in the summary, states that the need for library and information networks is already substantiated and justified; I do not think that is quite true for our consensus. What we really felt as a group, and what we stated in our draft report, was that there are information needs among all types of users which are presently not being satisfied and that the use of network techniques should provide significant improvements in meeting these unsatisfied needs. I don't think that this is quite the same thing as saying that the need for networks has already been justified.

Our second assumption, as stated in the summary, was that networks would be technically compatible at each interface level. I am not quite sure what the statement means, but what really concerned us and what we took a good time to discuss, both in the large group and in the small subgroup, was that compatibility is going to be the key to successful networking. This will include standardization, wherever appropriate, and will include preferred common practices, etc. Perhaps this assumption should state that the network should be technically *interconvertible* because that is where we have to look to achieve compatibility. We need to put the emphasis upon interface processing so that one can convert to his own local formats and requirements and yet be able to use common formats and mutually-agreed upon protocols for interchange purposes.

As a third point, we assumed that the network to be considered would be national in scope, but that it would also capitalize on regional and local subnetworks; with local networks serving the actual users within a ten-mile radius. We assumed that all types of libraries and information centers would make excellent use of computer and communication technologies to provide timely access in response to the sense of urgency in meeting users' needs for information. The network would incorporate switching mechanisms for requests and for referrals which would enable users connected to one node-store to have multiple access to other information stores at other nodes.

It was the consensus of the group that existing commercially available telecommunications services would be adequate for many services of the network. In other words, it was assumed that the use of the public dial-up telephone system would serve most users. The official consensus was that this could probably be done at a reasonable cost. I, myself, am a little skeptical, in the initial stages at least, of this cost-feasibility estimate. For example, one study shows an estimate of close to $700,000 for an anticipated volume of 800,000 calls a year. I assume that we're not talking about a network of this size; we're not talking about 800,000 calls a year, we're talking about millions of calls.

Then, for the major nodes of the network, we will need to look to broad-band communications--hopefully of course, to the existence of new types of carriers, whether microwave or other special purpose carriers. The prospects for CATV and for domestic satellites should make the dream of a reasonable cost for such services practical.

In this connection, we felt it was very important to stress that the library associations should become aware of their responsibilities and provide information and supporting services. They should help local libraries and centers in working with their local communities, perhaps in the area of franchising of community TV to take advantage of, say, the 20% of capacity set aside for educational public use. More effort will be required here.

We talked about the technological problems of storage and materials handling and developed a specific example of requirements in terms of file size and access time, as follows:

> "For storage of bibliographic data, it is assumed that a 10 billion (1×10^{10}) character, read-write memory unit at a cost not to exceed 1 million dollars is a reasonable requirement for a major network node. It is further recommended that the access time on such units must be on the order of 50 milliseconds or less. An independent access part must be provided for, at the minimum, each 200 million characters of storage in the unit."

Such a memory is feasible for read-only applications today; we want that capability extended to writing and erasing, also.

In terms of computer technology and software, we stressed questions of file organization; accessing and updating; automatic indexing, categorization, and extracting; and compression, with capabilities for reconstruction, of textual and graphic materials. Other technological considerations included improvements in optical character recognition, user terminals and human factors, and page-turning, for example.

Our conclusions ranged from the general to the specific. We suggested that Congress be urged to continue and to increase funding for the MARC program. This is one of the major ways in which we will be able to achieve compatibility. We also recommended more effort on the RECON project in the sense of urging the Library of Congress to expand its conversion, hopefully to achieve two million more records within the next two years. We also urged the expansion of records of current materials for the entire intake of foreign language and reference materials and the expansion of the activities of all three national libraries, again with the next two years.

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Other recommended actions were:

To encourage development of user-library networks using telephone or cable TV;

To encourage libraries to enter into local TV francise negotiations;

To encourage private line communication channels of a wide variety of bandwidths; and

To request the Corporation for Public Broadcasting, through the U.S. Office of Education, to consider including digital header-frames in all educationl TV moviews and video programs.

A very strong point made by the Network Technology Working Group was to emphasize that, if we are to provide a source of information for the community, we must stress from the start that there be a long and rigorous requirement for systems analysis and systems design, and that it will be necessary to apply scientific planning tools and techniques, such as network modeling, simulation, and testbed and pilot operations, before it will make sense to commit oneself to large scale investments. We also suggested several specific areas of research support, and, finally, we stressed the importance of replication; that is multiple copies of machine-readable bibliographic data bases to provide physical security against fire, damage, and loss. Similarly, it will be necessary to have considerable redundancy in the equipment of the network.

MRS. HENDERSON:Are there any specific questions or comments at this point? If not, let us go on to the working group on Network Organization, which will be summarized for us by Mr. Robert B. Lane, Readers Services Division, Air University Library.

MR. LANE: Paul Howard was to have been a member of this group but became very ill just before the conference, and I am sure that the eventual results of our group sessions suffered very much by his absence.

The original conference proposals submitted to the U.S.O.E. outlined the five-part mission of the working group which would deal with the organization of networks. The members of such a group would:

1. Consider all aspects of organization and management implied in network implementation.
2. Make a study of the probable effects that network organization might have on conventional library administration and the degree of commitment required on the part of all who participate in a network compact.
3. Define the legal, contractual, and financial implications of network operations.
4. Attempt to place in perspective the social problems which may arise when information of all kinds becomes more widely available to the public.
5. Produce the framework and guidelines and general organization plan for promoting and accelerating the establishment of network libraries and information centers in the United States.

To say the least, this was a formidable set of tasks which were to be accomplished by 23 people, handicapped by working in a group, in the space of four days, but we got off to a good start. Group members contributed six of the 31 conference commissioned papers, among which was the last to be commissioned, the longest, and, possibly, the most useful of all submitted. This paper was Harold Hacker's review of the reasons for, and methods of, New York State's progress in systems development over the last 25 years. Hacker's paper "fleshed-out" and updated a similar review which had been made by Gilbert Prentice in Chicago at the Graduate Library School's Network Conference in 1968. Maryann Duggan explored the legal and contractual aspects of interlibrary operations in her paper, and Phoebe Hayes discussed the financial formulas for network implementation in hers. In the three other papers originated by members of this group, Bob Heinick (the group leader and Professor of Education at Indiana University) touched on the social implications; Ron Miller provided a case study of his experiences with the Five Associated University Libraries in upper New York State, and Maryan Reynolds, the Washington State librarian who, since 1951, has led her state to a series of successful multi-county library system developments, tried to formulate and postulate the eventual authority which would accrue to a Network Director.

Not all of the papers were as useful as Hacker's, but they did act as a common fund of knowledge, and, in connection with the five-part mission of the group, might have provided the basis for the development of several more manageable subgroups which could have then undertaken a thorough analysis of specific topics and problems. But this did not happen. Why it didn't and whether even it

should have, are questions mainly of interest to the group, and I won't go into them. But as a result, the Group on Organization remained a committee of the whole until relatively late in the week, and, when it reported, the conclusions and recommendations it had to offer were general in nature and were the result of a skillful distillation of a fairly wandering and poorly connected week of deliberations by Bob Heinick and his brilliant associate leader, Dick Dougherty, who is now on the faculty of the University of Syracuse Library School.

Among the most significant of this group's findings, the following can be noted: There are several pressing problems which must be solved prior to the full realization of networking on a national scale. First perhaps, and foremost, is the need to establish ways and means of promoting the support for, and passage of Federal and state enabling legislation, which will permit local agencies to participate freely in the network and authorize the establishment of local levels of coordinating agencies. To this end, the group recommended that studies be initiated at state and national levels to examine existing legislation in order to identify laws which inhibit network progress, and to determine what new legislation is needed to accelerate implementation of the network concept.

It was felt that we are faced with the necessity of securing funding and experienced faculty, and of developing appropriate curricula, to train personnel for the management of large-scale network operations. It was the general consensus of this group that network staffing will demand new skills, new types of positions, and a new philosophical base of service. Therefore, an aggressive program of education and re-education at all levels of the profession is needed.

The third matter of concern felt very deeply by the public librarians participating, and shared by all of us, was that a means of regulating network development, to ensure that the network would serve the public good and would reach out to all citizens, must be built into the basic fabric of the program. The group's final report, in fact, begins this way: "Our paramount concern is for the public good. We believe, "it goes on, "that networks are intended to serve all, and that in their construction they should be general-purpose so far as possible." Group deliberations adopted the premise that information is a public asset, and that network organizations should therefore serve the public interest."

While these problems, and the positive terms in which they were described, represent the concern shared by all of us, no one would claim that their enunciation at Airlie was earthshaking in originality. Nor was it difficult to sympathize with Arthur Plotkin, who reviewed the culmination of the Conference for the November issue of *Wilson Library Bulletin,* and who stated at one point that: "The initimations of *deja vu* were thicker than the Blue Ridge flies who descended in droves upon the commodious Federal Room of Airlie House where the final plenary session was held."

Deja vu or not, what are the implications for Federal libaries and librarians of the Networks Organization Group's conclusions and recommendations?

First, it should be noted and emphasized that individuals like Hacker and Duggan, Al Trezza of Illinois and Dick Logsdon, all members of this group, who have been tremendously effective at the local and county and state levels in developing broad-based cooperative assistance with and without Federal aid, recognize, and generally accept, the key part to be played by the national libraries, by other Federal libraries, and by the Federal Government, in the final series of technological, political, financial and leadership breakthrough which would lead to an operative national system.

It was considered as essential that "in-being" and planned Federal information programs be coordinated in order to combine resources and contribute to, and mesh effectively with, an emergent national network. This coordination, it was concluded, would come from a single contact point to be created by Federal legislation which would provide sufficient power and authority to ensure the success of its mission.

The final summary statement of this group does not specifically refer to the National Commission on Libraries, but it is obvious to me that we were reaching the same general conclusions about the role of that new body as regards a network organization, as was the Network Planning Group led by Carlos Cuadra of Systems Development Corporation (SDC). Art Plotkin, in the review I mentioned, called this particular action "buckpassing to an organization not yet functioning." I see it as a call to action and the specific direction for a Commission which has been left wandering in the confines of the Executive Office Building waiting for its members to be named and appropriations to be granted; but that's another story.

I will now take this opportunity to pass the buck to Fred Croxton who was a member of the National Planning Group, whose recommendation was adopted unanimously as one of the only two floor resolutions of the final Conference Plenary Session.

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MRS. HENDERSON: You come with a high recommendation, Fred. More formally, perhaps: the Working Group on Planning will be summarized by Mr. Fred Croxton, Chief of the Administrative Department, Library of Congress.

MR. CROXTON: Our group was made up of Carl Spaulding, John Humphries, Fred Bellomy, Carlos Cuadra, Gordon Williams, Carl Overhage, and a number of others. I mention these names only to emphasize the differing backgrounds used to approach this subject. Mrs. Henderson asked me to head these remarks with four subjects: objective, method, results, and problems. I am going to take them in that order.

Objective: Since I am not working from a prepared paper, I have paraphrased the objective. Our task was to recommend an approach which could be used to develop a plan, or plans, for a network or networks, which would assist the library function.

Method: We used the method, which I believe was used throughout the Conference, of breaking up into smaller groups; discussing the results of the assignment within the smaller groups; going back into the same or other smaller groups; bringing forth rather poor prose which was edited by the large group and generally coming out with something which the Chairman of the Group, Dr. Cuadra, had to work over rather late at night after he got back home.

Results: Our primary result was the single recommendation first mentioned, that the National Advisory Commission on Libraries and Information Sciences foster the development of a comprehensive national plan to facilitate the coordinated development of the nation's libraries, information centers, and other knowledge resources. This was rather carefully worded to avoid two things: (1) specifying an inflexible definition of the plan, and (2) trying to do a systems design job or a network design job with 25 people around a table. We felt either would be a great mistake.

Another result was an increase in the interest level of the people who attended the Conference as a whole on the subject of networking, and a third result was reaching some rather obvious technical conclusions that the problems of planning for a network were largely the problems of standards.

In the case of the information networks, problems of standards evolve into three areas: (1) standardization of language; (2) standardization within the technology itself, and (3) standardization of protocol. (I'm using protocol in the same sense as Miss Stevens used it).

Language standards are needed if consistent terms of inquiry and storage are to be used. We must have compatible, or at least convertible, languages. Technological standards are essential to start a network; they must make provision for the coming advances in technology (this is one of the problems with an inflexible plan) and they must provide for dynamic balancing of the system. This will be a real problem in an information network with millions of messages.

Protocol standards relate to such things as membership, costs, access limitations, and administrative control of the network itself. These things enable one to be a part of the network, and enable one to bear his share of the cost of the network.

Problems: Some of the problems related to the size of the group. It was a bit too large to discuss things in detail. We occasionally had some difficulty with monopolization of conversation in some sessions, but this I think could be expected, and it was fairly well controlled. There was much talking around a point rather than grappling with specific tasks, but that is also characteristic of large groups of people.

I think we had our greatest difficulty with one of the basic assumptions. We all assumed that there would be a network, and we were there because that assumption had been made. However, I think that too many in the group assumed that an information system would be evolved as a result of optimizing some engineering concept of a network. Not all of us believed this, and I must say I didn't. There are networks now and there will be many more networks when the time comes for linking them together. Networks develop because people have to have certain information. For instance, we have the AEC networks and the DOD networks, which were not created from above, but were created because there are outlying needs for the same kind of information. Networks actually seem to start from the outside and come inward to a node. They don't start at the node and feed outward until after the need for the information is developed. We may have started from the wrong assumption when we looked at networks from an engineering point of view.

We also made what seems to have been a different assumption from that reported for Mrs. Avram's group. We did not believe that it would be advisable for a single organization to try to create a single record that would solve all problems. On the contrary, we felt that the record created at any one place

should be accessible to everyone so that none of it would be re-done; however, we expected it to be augmented by ther organizations to serve their needs. I don't think that the end product of our discussions differed; it was the manner of getting there that differed a little.

MRS. HENDERSON: Are there any questions at this point?

PARTICIPANT: I'd like to hear Henriette's view on Fred's statement for clarification of these differences of opinion.

MRS. AVRAM: What we suggested was a central agency composed of many institutions, organized in such a way that one could take advantage of data consistency. Mary Stevens, for example, used the expression "convertibility of format." You can convert, be compatible with the structure of the format, etc., but in this context, it is the content of the data itself that must be consistent. If one looks at the functions of bibliographic services, it becomes very clear that you are not going to change the function of the library as compared to the functions of an abstracting and indexing service. What is needed is some method to have the creation of what I'm calling a "one-time record," regardless of where it is created, so that we don't have duplication of the same item.

MR. CROXTON: This was not the conclusion I heard in the Planning Group. The conclusion of that Group was based on the fact that there are significant differences in information needs among users of the same information. For example, an abstract prepared for planners of space vehicles would be different from an abstract prepared for readers of a botanical journal for, let's say, a paper on closed ecological cycles for foods.

MRS. AVRAM: What I'm trying to say, Fred, is if an item is described in an abstracting and indexing journal, the user should be able to find that item in a catalog. Very often, he cannot find it because, content-wise, the data are different. The creation of a record should serve more than one function so that the most important thing is accomplished—the user can get what he wants. This is what we are trying to bring out.

QUESTION: Is that comment based on the efficiency of doing it that way, or might it be better to just acknowledge that it costs more to do it twice?

MRS. AVRAM: It's not only that it costs more, but, more important, it is often virtually impossible to match the bibliographic descriptions of one item cataloged at different sources. This inconsistency is demonstrated in the National Union Catalog. There are many entries of the same item, simply because it is difficult to recognize that they are, in fact, the same item. That is perhaps the best analogy.

MRS. HENDERSON: Dr. Joseph Leiter, National Library of Medicine has a question.

DR. LEITER: I think that the problem of duplication is greatly overemphasized. I think that the literature says it costs more, and I think everybody say it costs more, to duplicate, but I think it also costs more to be inconsistent. I think what we must consider is how much duplication can be allowed in order to attain any degree of consistency. And for all amateur librarians like myself, there are no consistent rules. Here, in the Library of Congress, you have difficulty finding a person using the rules that are used in the National Library of Medicine, yet the person is using the consistent rules for entry in this library.

MRS. AVRAM: Why don't we have one record created with variant entries?

DR. LEITER: I think that's a different problem. I find it very difficult to be Everyman for everything because I think that the times when Everyman wants everything are extremely rare, and paying the price of providing everything for every user at any conceivable time is an unrealistic one. I'm not so much concerned with this as I am with how often I will find something in my field of interest which is not in this library, and I think the percentage will be very high. If it's something in archaeology, I'll have trouble but in the field of biochemistry or medicine, I'm not going to have the same trouble. You don't

give the user enough credit for knowledge, and I think as information specialists we should be less concerned with educating ourselves. By using the user's capability to a maximum, I think you would optimize better.

I also find it difficult to distinguish between the singular and the plural, when we talk about network or networks. I couldn't figure out whether we were, in a true Federal bureaucracy, trying to develop only a monolithic structure because that's our very nature. Really, when it comes to the field of medicine, I can recognize the possibilities of non-monolithic structures elsewhere. We all think we need a central library, but not enough of us think this.

COMMENT: It was clear from the discussion in the Planning Group that they definitely felt a monolithic structure was not the form envisioned.

MR. LORENZ: On another point, I think that some very significant actions may have been taken at the Conference which were't exactly planned in advance. It seems to me that the involvement of the Federal Communications Commission in the very first meeting was a significant step. It isn't clear to me what the message to this Commission is to be, but it seems to me that it would be very timely and that perhaps a message was gotten across at the conference which will result in more capability and lower cost for inter-library communication than might have otherwise been possible. Joe Becker, would you like to say a word about the message to the Commission, since it isn't clear to me?

MR. BECKER: It was Kenneth Cox who was the speaker. He's a former Commissioner with the FCC and had resigned from it about a month before. But in his informal conversations with me, he pointed out that as far as the library community's needs for telecommunications were concerned, at least to his knowledge, this was the first time that he had heard them described. I think describing the various telecommunications programs of the Federal Government gave him a better understanding of the library community's concern.

MR. LORENZ: I had the feeling, though, that some action was imminent, into which we were able to get a message.

MR. BECKER: As a matter of fact, we did pass more than one resolution from the floor the next day. The first recommendation was the reserving of a telecommunications band for educational and library purposes. The second one had to do with the recommendation for a World Conference for consideration of these needs.

MR. FRANK NORWOOD: I'm Frank Norwood, Joint Council on Educational Telecommunications, and I'd like to take a minute to speak. The World Conference comes up in June, and the American position which has been developed over the last couple of years would have assigned that band for space use to something called the earth resources satellites. These are essentially sensor devices which measure the height of waves or their spread or a number of things. We had urged for some time that those frequencies, which in this country were assigned to the instructional television service, were also to be internationally assigned for communications satellites, particularly for use for educational – in the broadest sense of that word – for educational and other public purposes. There are a number of basic reasons for that; one being that this is a very desirable set of frequencies. From a technical viewpoint, they are useful and not all frequencies are equally desirable for satellite use. Secondly, they are feasible as far as the technology is concerned, inasmuch as we already have available on–shelf hardware which would allow public development of satellites of far greater power than anything that has been launched to date, as far as communications are concerned. Hughes Aircraft Corporation has a proposal before NASA for an experimental satellite which would delivery television with such power that it would be possible to receive it on sets with no difficulty at all.

MRS. HENDERSON: To conclude our discussion today, we've asked the Chairman of the Advisory Board of the Conference to speak to the subject of the implications, both for the Federal Library Committee and for the Federal library community, of the Conference recommendations. The Chairman is Dr. Russell Shank, Director of Libraries, Smithsonian Institution.

DR. SHANK: Because of their national visibility, Federal libraries may find themselves increasingly involved as the command or switching centers for library and information networks serving their agencies' missions throughout the nation. They may be so involved, without their having been designated "national libraries." Furthermore, Federal libraries will be operating at the most, not the least, sophisticated technical level since many regional and subject-oriented library networks may course through the national center.

Even if Federal libraries were not to be involved in extra-governmental networks, the network concept (system organization and telecommunication linkages) is important for interlibrary cooperation among themselves. Improvements and advancements in networking among Federal libraries will improve their performance and provide models for operations elsewhere.

Many members of the Federal library and information service community participated in the Conference on Interlibrary Communications and Information Networks. The Federal Library Committee should capitalize on this by bringing these people together as an *ad hoc* group to examine in detail the many ideas, facts and fancies discussed at the Conference. Many of these people will have extensive notes and recollections of detailed discussions that will not be published in the Conference Proceedings. Some of these data should be brought to bear on the problems of communication among Federal libraries. Perhaps the Federal Library Committee can use this group to begin active planning of the next steps in the utilization of network technology among Federal libraries.

MRS. HENDERSON: This concludes this portion of our meeting. I wish to thank all of you for attending and participating in this meeting. We shall take the necessary steps to act on the suggestions which were made here and you will be informed of the results at another meeting.

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PART II. FLC MEETING, APRIL 28, 1971

INTRODUCTION

Acting on Dr. Shank's suggestion, the FLC Task Force on Automation, aided by Mr. Peter Haskell of the Washington Seminar: Library Career Development Institute, undertook a study "in detail of the many ideas, facts and fancies discussed at the Conference." The commissioned papers were examined as a total package; local attendees were consulted at some length and the Working Group summaries were studied with care. A preliminary list of recommendations emanating from the Conference was drafted by Mr. Haskell and reviewed by the Task Force members. Those recommendations deemed not directly pertinent to the Federal library community were deleted from the list, and the remaining ones were arranged to bring similar recommendations together. After further consultation and editing, the refined list was prepared for distribution to the Federal Library Committee at its April 28 meeting. The presentation follows.

PRESENTATION TO FLC MEMBERS, APRIL 28, 1971

Conference on Interlibrary Communications and Information Networks
Implications for Federal Library Community Implementation

This is a refined list of summary conclusions and recommendations of each of the five Working Groups that comprised the Conference on Interlibrary Communications and Information Networks. For ease of discussion, items have been arranged into broad categories and assigned arbitrary numbers.

The list was prepared as a basis for discussion at the April 28 meeting of the FLC. It is intended to provoke discussion along two lines:

1. What are the possible ways for Federal library implementation of CICIN recommendations?
2. What priorities should be assigned the various recommendations and/or actions?

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POLICY ASSUMPTIONS

1. The general direction of Federal and other government and private development policy should support, promote, and encourage cooperative efforts between organizations, institutions, and developing networks through –
   a. Freedom of competition and innovation;
   b. Maintenance of the widest possible range of options, including the development and operation of new alternative communication systems – public, private, or non-profit;
   c. Unimpeded flow of information without needlessly restrictive communications regulations, copyright, or other government and industrial practices;
   d. Technical compatibility for communication among networks, institutions, and individuals by means of translation and/or standardization;
   e. Establishment of mechanisms to review development objectives and priorities, and to monitor system performance on a continuing basis.
2. Federal agencies, charged with responsibility for fostering the development of information handling processes, should assess their progress and extend their efforts to meet established goals. Federal information programs should be coordinated effectively in order to ensure that their combined resources will support a national library and information network in optimum fashion.
3. All information network research, planning, and design should take account of the findings of relevant current and completed research. Scientific planning tools and techniques, such as network modeling, simulation, and testbed and pilot operations should be applied before making large-scale investment commitments to network implementation and operations.
4. Studies should be initiated at state and Federal levels to examine existing legislation in order to identify laws that inhibit network progress and to determine what new legislation is needed to accelerate implementation of the network concept.
5. Networks should provide for an increase in both the number and kind of access points, including individuals, organizations, institutions, resource centers, and media facilities of all kinds. Availability of information resources appropriate to each functional level must be guaranteed.
6. Networks should encompass *existing* information services of all kinds and forms of service. Increased attention should be given to the ways and means by which special-purpose networks can be integrated with general-purpose networks. It is a national responsibility to ensure that access to specialized information is made available at each level of the network hierarchy.
7. Feedback mechanisms should be established at every level of the network to monitor performance of equipment, personnel, and services, and to record reactions of staff and users to the operation. Research is needed to ensure optimum effectiveness in network operations, e.g., development of evaluation models to measure effectiveness at all organizational levels; development of organizational models that are adaptable to the needs of different localities; and development of network funding models that can facilitate network implementation.

EDUCATION

1. The skills, knowledge, and insights required in network organization and administration must be identified. Librarians, information producers, and users must be educated in the network's operations. Personnel must be educated and trained for the mediation function between requestors and information resources. Performance standards for personnel engaged in the mediation function should be promulgated. This effort should involve representatives of all interested groups and should address itself to basic professional education, continuing education, and the training of paraprofessionals, taking cognizance of the various staffing requirements of network operation. There is need for a radically different approach to continuing education in library and information science, utilizing the new technologies. A new national program must make available to any librarian or information scientist, at any time and at any place, the resources and expertise he needs in order to provide effective services in a network environment.
2. Current curricula of library and information science schools should be studied as input in the preparations of guidelines for alternate experimental courses and multidisciplinary curricula. Subsequent demonstrations, conducted in library and information science schools, can be used to test the guidelines.

3. A broad program of public and professional education is needed to advance the network concept and to motivate people to support changes in information methods, practices, and organization.

CURRENT PROJECTS TO BE ENCOURAGED OR EXPANDED

1. The American National Standards Institute Sectional Committee Z39 should be charged with the development of standard content designators for similar items of information across various forms of material. Funding and personnel should be provided by government agencies at national, state, and local levels.
2. Bibliographic tools, such as union lists, union catalogs, and directories, should be provided to make network resources more easily available at all levels (depending on the size and scope of the resource). The feasibility of an integrated system for recording and accessing information on the location and availability of materials within a network should be studied.
3. Increased acquisition and improved accessibility of nonprint materials and data files should be provided.
4. The Council on Library Resources should be requested to support implementation of a program of Cataloging-in-Publication. Assuming successful initial implementation, an on-going program covering all possible publishers of various forms of materials should be undertaken with funding through regular appropriations. Availability of a standard, if brief, record prior to publication which appears in the published book will go far toward attaining the goal of timeliness as well as that of promoting acceptance of the standard record by user agencies.
5. The Library of Congress should expand the coverage of its MARC program. Methods of funding this expansion should be investigated. In particular:
   a. Retrospective bibliographic data conversion should be expanded with the aim of producing 2,000,000 machine-readable records, as well as adding to the existing MARC tapes within the next two years.
   b. The production of machine-readable records of current materials should be expanded to include the entire intake of national library acquisitions, including foreign languages and nonprint materials, within the next eighteen months.
   c. Retrospective record conversion activities should be expanded to encompass all three national libraries within the next two years.
6. Bibliographic control of all forms of material, at all levels and for all subject areas, should be established, based upon the creation of a standard, one-time bibliographic record. A national center should be designated to coordinate the creation of standard bibliographic records for all forms of material. The record created by any participating organization should fulfill the needs of all users, irrespective of the needs of the creator of the record. While a reduction in duplication of cataloging can be expected to result in reduced nationwise cataloging costs, funding to reimburse participating organizations for more complete cataloging and to maintain the national center will be required.
7. Machine-readable bibliographic data bases should be replicated and their physical security guarded as insurance against fire, damage, or loss.

NEW PROJECTS TO BE EXPLORED OR UNDERTAKEN

1. A nationwide descriptive inventory of library and information networks should be prepared.
2. The performance of existing networks should be assessed in the context of their mission and the elements determining success and/or failure identified.
3. A continuing assessment should be made of major unsatisfied information needs (within the Federal library community) according to user category, in order to identify those needs that might properly be met by networks. Research into user needs, systems evaluation, and the flow of information through the networks should be conducted.
4. A scientific analysis of costs and performance potential of alternative methods of providing information should be made.
5. A study should be made of the content and physical form of recorded information in order to identify areas of redundancy and duplication.

6. A fee structure for services should be considered under arrangements which should not preclude access to information by users.
7. The library and information science community should promote free or low-cost telecommunication rates for educational purposes as a dividend for taxpayer investment in the development of communications technology. Appropriate communications links, delivery systems, and switching mechanisms should be provided at all levels of the network.
8. Appropriate organizations should designate agencies to assign the standard identification numbers for the various forms of material. Such agencies will require the cooperation of the "national bibliographic center" if the broadest coverage is to be attained, or the coordination of standard numbering might be made a function of the national bibliographic center itself.
9. Development of user-library networks using telephone or cable TV systems to provide interconnection should be encouraged. In order to simplify terminal design and lower terminal costs, carriers and cable operators should be encouraged to provide lines with definitely specified and guaranteed performance characteristics. Libraries should be encouraged to enter into local cable TV franchise negotiations in order to reserve channels and ensure access to such systems by libraries during the next few years. The use of public channels on a common carrier basis should also be sought by local libraries. Private–line communication channels with a wide variety of band-widths, and as few restrictions on sharing and band subdivision as are appropriate for technical reasons, should be encouraged, in order to provide low-cost interlibrary inter-connection. Competition in the provision of these services should be supported, in order to increase diversity of services offerings and to reduce costs.
10. The Corporation for Public Broadcasting, through the U.S. Office of Education, should be requested to consider including digital-header frames in all educational TV movies and vieeo programs.
11. Research and development through development of multifont character sets, including non-Roman alphabets, and format recognition should be supported, including:
    a. Specifications for keyboard-CRT user terminals specifically designed for input and retrieval of bibliographic and surrogate information.
    b. Page-turning devices and page-presentation procedures to facilitate automatic reading by optical scanning equipment.
    c. An ultra-high-speed scanner with very high resolution to use for input of text or micro-image materials into storage, OCR logic, or for facsimile transmissions.
12. The National Library Task Force on Automation should strive to integrate the automation programs of the three national libraries as soon as possible. The automation programs of the Library of Congress, the National Library of Medicine, and the National Agricultural Library are of paramount importance in achieving a unified, national library and information network development program.

RECOMMENDATIONS

FLC members accepted the list at the April 28 meeting as containing recommendations pertinent to the Federal library community, and suggested that individual FLC Task Forces study the list to determine whether they can mount specific projects or longer-range programs based on these recommendations. Such projects or programs will be presented to the FLC by the Task Forces for discussion and approval, according to the usual FLC procedures.